

## **BIM-based Construction Noise Management Approach With a Focus on Inner-City Construction**

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**Abstract :** Growing demand for a quieter dwelling environment has turned the attention of construction companies to reducing the propagated noise of their project. In inner-city constructions, close distance between the construction site and surrounding buildings lessens the efficiency of passive noise control methods. Dwellers of the nearby areas may file complaints and lawsuits against the construction companies due to the emitted construction noise, thereby leading to the interruption of processes, compensation costs, or even suspension of the project. Therefore, construction noise should be predicted along with the project schedule. The advantage of managing the noise in the pre-construction phase is two-fold. Firstly, changes in the time plan and construction methods can be applied more flexibly. Thus, the costs related to rescheduling can be avoided. Secondly, noise-related legal problems are expected to be reduced. To implement noise mapping methods for the mentioned prediction, the required detailed information (such as the location of the noisy process, duration of the noisy work) can be exported from the 4D BIM model. The results obtained from the noise maps would be used to help the planners to define different work scenarios. The proposed approach has been applied for the foundation and earthwork of a site located in a residential area, and the obtained results are discussed.

**Keywords :** building information modeling, construction noise management, noise mapping, 4D BIM

**Conference Title :** ICCEPM 2021 : International Conference on Construction Engineering and Project Management

**Conference Location :** London, United Kingdom

**Conference Dates :** November 18-19, 2021